

## WHAT IS CLAIMED IS:

1. A friction disc for a brake assembly comprising:  
an annular structural core having at least one sinusoidally-shaped mounting surface; and  
5 at least one frictional lining element having a sinusoidally-shaped mounting surface and a relatively, flat wear surface, said mounting surface of each frictional lining element matingly engaging said mounting surface of said structural core.
2. The friction disc according to claim 1, wherein said annular  
10 structural core is formed from strength-optimized carbon-carbon composite.
3. The friction disc according to claim 1, further comprising drive lugs on an inner diameter of said structural core for mounting to a torque tube of the brake assembly.
- 15 4. The friction disc according to claim 1, further comprising drive lugs on an outer diameter of said structural core for mounting to a wheel.
5. The friction disc according to claim 1, wherein each friction lining element is formed from friction optimized carbon-carbon composite.
- 20 6. The friction disc according to claim 1, further comprising at least one mechanical fastener securing each friction lining element to said structural core.
7. The friction disc according to claim 2, wherein each friction lining element is formed from friction-optimized carbon-carbon composite.
- 25 8. The friction disc according to claim 7, wherein said friction disc is a stator disc, rotor disc, backing plate disc or pressure plate disc.

10. A friction disc for a brake assembly comprising:  
an annular structural core having at least one mounting surface  
5 having a plurality of recesses; and  
at least one frictional lining element having a mounting surface and  
a relatively flat wear surface, said mounting surface of each frictional  
lining element having a plurality of dimples formed for matingly engaging  
said plurality of recesses of said structural core.

12. The friction disc according to claim 10, further comprising  
drive lugs on an inner diameter of said structural core for mounting to a  
torque tube of the brake assembly.

14. The friction disc according to claim 10, wherein each friction  
20 lining element is formed from friction optimized carbon-carbon composite.

16. The friction disc according to claim 11, wherein each friction  
25 lining element is formed from friction optimized carbon-carbon composite.

17. The friction disc according to claim 16, wherein said friction disc is a stator disc, rotor disc, backing plate disc or pressure plate disc.